## **CLAIMS**

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- 1. Solid Lipid Nanoparticles of platinum compounds.
- 2. Solid Lipid Nanoparticles according to claim 1 wherein the platinum compounds are platinum complexes.
  - 3. Solid Lipid Nanoparticles according to claim 2, wherein the platinum complex is selected from trans-{bis[trans(diammine)(chloro)platinum (II)(µ-1,6- hexanediamine)]}diammineplatinum tetranitrate salt of formula I

$$\begin{array}{c} O \\ N = O \\ O \\ O \\ \end{array}$$

$$\begin{array}{c} O \\ N = O \\ O \\ \end{array}$$

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$$\begin{array}{c} O \\ N = O \\ \end{array}$$

## Formula I

 $bis\{trans(diammine)(chloro)platinum(II)\}\mu\text{-}(1,16\text{-}diamino\text{-}7,10\text{-}diazahexadecane-}N1,N16)\ dinitrate\ salt.\ 2HNO_3\ of\ formula\ II,$ 

CI 
$$M_{1}$$
  $M_{2}$   $M_{2}$   $M_{2}$   $M_{2}$   $M_{2}$   $M_{3}$   $M_{4}$   $M_{2}$   $M_{2}$   $M_{2}$   $M_{3}$   $M_{4}$   $M_{2}$   $M_{2}$   $M_{3}$   $M_{4}$   $M$ 

## Formula II

bis{trans(diammine)(chloro)platinum(II)}μ-(1,16-diamino-6,11-diazahexadecane-N1,N16) dinitrate salt. 2HNO<sub>3</sub> of formula III,

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Formula III

bis{trans(diammine)(chloro)platinum(II)}- $\mu$ -(1,12-diamino-4,9-diazadodecane-N<sub>1</sub>,N<sub>12</sub>) dinitrate salt. 2HNO<sub>3</sub> of formula IV,

Formula IV

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bis {trans(diammine)(chloro)platinum (II)}- $\mu$ -(1,8-diamino-4-azaoctane-N<sup>1</sup>,N<sup>8</sup>) dinitrate salt. HNO<sub>3</sub> of formula V,

10 Formula V

- 4. A process for the preparation of Solid Lipid Nanoparticles of claims 1-3, comprising:
  - a) preparing a first microemulsion by mixing a molten lipid, a surfactant, and optionally a co-surfactant and the platinum compound acqueous solution;
  - b) preparing a solution by mixing a surfactant and optionally a co-surfactant in water, heating to complete solution, preferably at the same melting temperature of the lipid used in a) and adding a co-surfactant;
- c) dispersing the microemulsion obtained in a) into the solution obtained in b) obtaining a multiple microemulsion c);
  - d) dispersing the microemulsion obtained in c) in aqueous medium at a

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temperature ranging from 0.5°C to 4°C obtaining a dispersion of solid lipid microspheres;

- e) washing with aqueous medium through ultrafiltration the obtained lipid microspheres obtained in d) and lyophilizing, optionally in the presence of a bulking agent and of a cryoprotecting agent.
- 5. Pharmaceutical compositions comprising the solid lipid nanoparticles of claims 1-3.

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6. A method of treating patients affected by cancer sensitive to platinum complexes which comprises administering to said patients a therapeutically
 10 effective amount of the solid lipid nanoparticles of claims 1-3.